

**POLYMER-SUPPORTED METAL NANOPARTICLES
AND METHOD FOR THEIR MANUFACTURE AND USE**

ABSTRACT OF THE DISCLOSURE

A method for making polymer-supported metal nanoparticles is disclosed comprising providing a polymer support, contacting the polymer support with an appropriate metal nanoparticle or metal nanoparticle precursor, and contacting the polymer support material and metal or precursor with a fluid that swells the polymer support material sufficiently to allow the metal or metal precursor to diffuse into the polymer support. The polymer support material can be a plastic. Suitable metals include, the noble metals, with particular examples including palladium, rhodium, platinum, iridium, osmium, gold, nickel, iron or combinations thereof. The nanoparticles can comprise alloys or aggregates of plural metals. The fluid can be any fluid that facilitates polymer swelling. Also disclosed is a method for performing chemical reactions using a polymer-supported metal nanoparticle under conditions allowing chemical reactions to occur. Relative amounts of the reaction products can be varied by selecting an appropriate metal nanoparticle, polymer support material, or both.